

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/17/2010 has been entered.

**EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Donald Studebaker on 3/1/2010.

The application has been amended as follows:

Claim 1 (Amended): Apparatus for predicting bone fracture risk in an osteoporotic patient, comprising:

a Dual X-ray Absorptiometry scanner configured to scan a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of the body part within said body area;

an image analysis module configured to perform shape analysis using an Active

Shape Model and to perform texture analysis of the Dual X-ray Absorptiometry image to

Art Unit: 2624

thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module having a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, ~~[for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient]~~ to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from a mean co-ordinates of the comparative data sets, to thereby predict the risk of bone fracture in the patient.

Claim 6 (cancelled)

Claim 10 (Amended) Amended) An apparatus for measuring the progression of a disorder which affects the shape and/or trabecular structure of bone in a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce

a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape analysis using an Active Shape Model

and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an

image data set representative of aspects of the shape of the body part and the structure of bone

within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray

Absorptiometry images of control subjects, ~~[for comparison with the image data set generated~~

~~from the Dual X-ray Absorptiometry image of the patient]~~ to compare the Active Shape Model

data set generated from the Dual X-ray Absorptiometry image of the patient with the

Art Unit: 2624

comparative data sets in the database by examining how the location of landmark points deviates from a mean co-ordinates of the comparative data sets, to thereby provide a measure of the progression of the disorder in the patient

Claim 17 (cancelled)

Claim 21 (Amended) An apparatus for predicting a risk of osteoarthritis in a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape analysis using an Active Shape Model and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, ~~[for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient]~~ to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from a mean co-ordinates of the comparative data sets, to thereby predict the risk of osteoarthritis in the patient.

Claim 26(Cancelled)

Claim 30 (Amended): The apparatus for measuring non-pathological changes in a subject associated with age, gender, body mass index and/or genetics, the apparatus comprising:

Art Unit: 2624

a Dual X-ray Absorptiometry scanner for scanning a body area of the subject to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform analysis using an Active Shape Model shape and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, ~~[for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient]~~ to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from a mean co-ordinates of the comparative data sets, to thereby provide a measure of said non-pathological changes

Claim 35 (Cancelled)

Claim 39 (Amended): The apparatus for quantifying deformation of a proximal femur of a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape analysis using an Active Shape Model and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and a data comparison module comprising a database of comparative data

Art Unit: 2624

sets from Dual X-ray Absorptiometry images of control subjects, ~~[for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient]~~ to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from a mean co-ordinates of the comparative data sets, to thereby quantify deformation of the proximal femur.

Claim 41 (Cancelled).

***Allowable Subject Matter***

3. Claims 1-4, 7-15, 18-24, 27-33, 36-39, 42-44 (now renumbered claims 1-34) are allowed.

The following is an examiner's statement of reasons for allowance: The combination of cited references Mazzess et al (WO 94/06351), Giger et al (US 5,931,780) and Lang et al (US 2005/0010106) do not teach or suggest the features of claims 1, 10, 21, 30, and 29 the use of DXA technique by " *comparing the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from a mean co-ordinates of the comparative data sets*". No other found prior art of record teaches or fairly suggests the combination of claimed elements.

The Examiner finds no reason or motivation to combine the above references in an obviousness rejection thus placing the application in condition for allowance.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

Art Unit: 2624

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nancy Bitar/  
Examiner, Art Unit 2624

/WESLEY TUCKER/

Application/Control Number: 10/577,359

Page 8

Art Unit: 2624

Primary Examiner, Art Unit 2624